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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/728,883	12/01/2000	Steven Paolini	M-9377 US	5707

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EXAMINER

AKKAPEDDI, PRASAD R

ART UNIT PAPER NUMBER

2871

DATE MAILED: 09/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicati n No.

09/728,883

Applicant(s)

PAOLINI ET AL.

Examin r

Prasad R Akkapeddi

Art Unit

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-- The MAILING DATE of this communicati n appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☒ Claim(s) 6-9, 17 and 18 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 September 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 05/13/2003 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

a. Claims 1-3,12-15 and 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Evanicky et al. (Evanicky) (U.S.Patent No. 6,243,068) in view of Mori (U.S.Patent No. 6,288,700).

Evanicky discloses a liquid crystal display (Fig. 2B) containing plurality of layers (112-128) including a liquid crystal layer (118) and backlights (132,136).

Although Evanicky discloses a backlight having a red light source, a blue light source and corresponding light guides, Evanicky's light guides do not couple only red light or only blue light as recited in the instant claim.

Mori on the other hand in disclosing a light emitting flat panel that can be substituted for a backlight for a liquid crystal display (col. 5, lines 18-20), discloses a first light guide (2) for coupling a red light (4R), a second light guide (2) for coupling a green light (4G) and a third light guide (2) for coupling a blue light (4B). When this panel is used as a backlight for a liquid crystal display, as suggested by Mori (col.5, lines 18-20), the first light guide, the second light guide and the third light guide can be positioned to illuminate the surface of the liquid crystal layers of Evanicky. Mori discloses that the light sources are red, green and blue LEDs and also discloses at least two light guides for each source (Fig. 2) and that a color filter is not necessary (col.2, lines 54-55).

Evanicky discloses a first polarizer (120), energizing array (119), a liquid crystal layer (118), a second polarizer (116), a TFT array (119). The method performed by both Evanicky and Mori's devices is to display numerous mono-color or multi-color images.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to insert the light emitting flat panel as disclosed by Mori into the liquid crystal structure of Evanicky to achieve a thin display having very high brightness without the use of color filters, consumes low power and has low manufacturing costs (col.2, lines 1-7).

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3. Claims 4,10 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Evanicky and Mori as applied to claims 1 and 15 and further in view of Lowry (U.S.Patent No. 6,304,703).

Although Evanicky and Mori disclose a liquid crystal display with back light consisting of different colors from LED sources, light guides to transmit this colored light, neither Evanicky nor Mori explicitly disclose the use of lenses to focus the light outputting these light guides or that these light guides comprise fiber optic cables arranged adjacent and parallel to each other. Lowry on the other hand, in disclosing a LED based fiber optics display apparatus, discloses the use of lens array (Col.4, line 22). Lowry also discloses that the fiber optics or other types of light guides (Col. 5, lines 28-29) are arranged adjacent and parallel to each other (Fig.4). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate lens array and the arrangement of the fiber optics light guides as disclosed by Lowry into the display device disclosed by Evanicky and Mori to enhance the brightness of the device and to fabricate a small, lightweight device for use in military, outdoor sporting and trade show type events (col. 2, lines 20-30).

4. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Evanicky, Mori and Lowry as applied to claim 4 above, and further in view of Abe et al. (Abe) (U.S.Patent No. 5,857,761).

Evanicky and Mori disclose that the light guides and Mori discloses that these light guides (2) have light emitting parts (8) for the light to leak out.

However, the light guides are not fiber optic cables. Lowry discloses light guides comprising fiber optic cables. However, Evanicky, Mori and Lowry do not disclose that these fiber optic cables have deformities to cause light to leak out. Abe on the other hand, in disclosing a similar illumination device, discloses the use of fiber optic cables and light scattering regions (deformities) (Fig. 1), where the light can leak out.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the light scattering regions as disclosed by Abe into the display device disclosed by Evanicky, Mori and Lowry to make the connection between the light source and a radiation plate (LCD substrate) easier and a device that is compact, lightweight and easy to handle (col. 1, lines 50-57).

5. Claims 11 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Evanicky and Mori as applied to claims 1 and 15 and further in view of publication JP-2000171796 assigned to Howa Bussan KK (Howan).

Evanicky and Mori do not disclose that the light guides are made out of transparent sheets. However, Howan in disclosing a backlight assembly for a LCD, discloses a sheet like light assembly for such displays. When one replaces these sheet like assemblies with the light guides disclosed by Evanicky and Mori, they can be stacked on top of each other as recited in this claim. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to insert sheet like assemblies as disclosed by Howan into

the display disclosed by Evanicky and Mori to achieve compact, light weight device.

Allowable Subject Matter

6. Claims 6-9 and 17-18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Reasons for Allowance

A search of the prior art did not reveal a liquid crystal display device comprising:

(a) The first light guide, the second light guide, and the third light guide with fiber optic cables arranged adjacent and parallel to each other.

(b) The fiber optic cables have deformities to cause light to leak out of the fiber optic cables.

(c) The deformities are positioned such that light leaks out of the fiber optic cables only in areas corresponding to pixel positions.

(d) The first light guide, the second light guide, and the third light guide have deformities to cause light to leak out of each light guide.

(e) The deformities are positioned such that light leaks out of each light guide only in areas corresponding to pixel positions and the deformities are arranged in columns to coincide with columns of pixels.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Prasad R Akkapeddi whose telephone number is 703-305-4767. The examiner can normally be reached on 7:00AM to 5:30PM M-Th.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H Kim can be reached on 703-305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0530.



July 30, 2003



JAMES DUDEK
PRIMARY EXAMINER